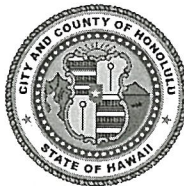


Authorization *Dean Uchida, Director*
Advertisement *Friday, March 5, 2021*
Public Hearing *March 17, 2021*

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
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RICK BLANGIARDI
MAYOR



DEAN UCHIDA
DIRECTOR

DAWN TAKEUCHI APUNA
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
DEPUTY DIRECTOR

February 17, 2021

MEMORANDUM

TO: Brian Lee, Acting Chair
and Members of the Planning Commission

FROM: Dean Uchida, Director *Uchida*
Department of Planning and Permitting

SUBJECT: Proposed Amendment to Chapter 21, Revised Ordinance of Honolulu
1990, as Amended (The Land Use Ordinance), Relating to Wind Machines

We are pleased to submit for appropriate action the Department of Planning and Permitting's (DPP) report and recommendation for the proposed amendment relating to Wind Machines.

The City Council introduced Resolution No. 19-305 on November 8, 2019. The Resolution proposes an amendment that will require wind machines with a capacity of 100 kilowatts or more to be setback five-miles from a property line. The DPP recommends disapproval of the proposed amendment and instead offers an alternative. Currently, wind machines with a capacity of 100 kilowatts or more must be set back from all property lines a minimum distance equal to the height of the system. The DPP proposal increases the setback to a distance 1,500 feet or a distance equal to no less than two feet for each foot of height, measured from the highest vertical extension of the system, whichever is greater, from any property line.

We would be happy to answer any questions that you may have concerning this matter during the Public Hearing.

Attachments

RECEIVED
21 FEB 17 P3:40
DEPT OF PLANNING
AND PERMITTING
CITY & COUNTY OF HONOLULU

A COUNCIL-INITIATED PROPOSAL RELATING TO WIND MACHINES

Staff Report

February 17, 2021

I. EXECUTIVE SUMMARY

Resolution No. 19-305 proposes an amendment to the Land Use Ordinance (LUO) that will require wind machines with a capacity of 100 kilowatts or more to be setback five-miles from all property lines. DPP recommends disapproval of the proposed measure for the following reasons:

- The proposed setback will result in a *de facto* ban on 100 kilowatt wind machines and is not consistent with City's General Plan (GP);
- A *de facto* ban on 100 kilowatt wind machines is inconsistent with the renewable energy policies and goals that have been adopted by the State and City; and
- DPP is not aware of any facts or studies that justify the imposition of a five-mile setback in relation to the health, safety, and welfare impacts of wind machines.

A summary of the legislative changes proposed by Resolution No. 19-305 is provided below, followed by a summary of relevant laws and planning principles, our analysis of the proposed legislation, and our recommendations. Attached to this report is an alternative to the proposed Resolution, that is, a draft bill that increases the current setback to a distance 1,500 feet or a distance equal to no less than two feet for each foot of height, measured from the highest vertical extension of the system, whichever is greater, from all property lines.

II. THE PROPOSED LEGISLATION

On November 8, 2019, the City Council introduced Resolution No. 19-305 initiating amendments to the LUO relating to wind machines. The proposal amends the development standards in Article 5. There are currently two categories of wind machines referenced in the LUO: One with a rated capacity of less than 100 kilowatts and a second with a capacity of more than 100 kilowatts. The LUO currently requires that both types be setback from property lines at a minimum distance equal to the maximum height of the system. If mounted on a rooftop, they must also be setback in accordance with the underlying zoning standards. The proposed amendment seeks to treat the setbacks associated with these two types of wind machines differently. The regulations pertaining to the wind machines with a capacity of less than 100 kilowatts would not change, but the wind machines with a rated capacity of 100 kilowatts or

greater would be required to be set back from all property lines a minimum distance of five-miles.

The Resolution suggests that setback distances should be increased for the utility-scale turbines (those with a rated capacity of 100 kilowatts or greater) in order to better protect people from possible negative health impacts that wind machines may cause.

III. RELEVANT LAWS AND PLANNING PRINCIPLES

A. The City General Plan

Section VI “Energy” of the City and County of Honolulu’s GP contains Oahu’s energy objectives and policies. GP Objective A calls for maintaining an adequate, dependable, and economical supply of energy for Oahu residents. Objective A, Policy 2, specifically states that measures should be taken to reduce Oahu’s dependence on petroleum as its primary energy source. In addition, Objective A, Policy 3, recommends supporting projects and programs that contribute to the attainment of energy self-sufficiency on Oahu and Objective A, Policy 5, states that consideration must be given to environmental, public health, and safety concerns, to resource limitations, and to relative costs when making decisions concerning alternatives for conserving energy and developing natural energy resources. Objective D of the GP speaks to developing new, locally available energy resources. Objective D, Policy 1, specifically supports the development and commercialization of wind energy.

A Proposed Revised (PR) GP was reintroduced at Council on January 6, 2021 as Resolution No. 21-23. Energy policies in the PR GP are generally consistent with those in the existing GP, with new additions. “Increasing energy self-sufficiency” is added to Energy Objective A, and Policy 7, further adds to “manage our resources and the development of our communities in line with the long-term goals of net zero to net positive performance in the areas of energy, carbon emissions, waste streams, all utilities, and food security”. Policy 8, encourages the use of commercially available renewable energy systems in many types of developments, and Policy 9, urges the consideration of health, safety, environmental, cultural, and aesthetic impacts, including land use patterns, in all major decisions on renewable energy. Objective B, Policy 5, encourages the implementation of an adaptable and reliable electrical grid and transmission, storage, and generation technologies.

Also consistent with recommendations in the current GP are Natural Environment and Resource Stewardship Objective B, Policy 3, that advises to locate and design public facilities, infrastructure and utilities to minimize the obstruction of scenic views, Transportation and Utilities Objective D, Policy 4, that advises that the social, economic, and environmental impact of additions to the transportation and utility systems be evaluated before they are constructed, and Energy Objective A, Policy 1, that encourages a comprehensive plan to guide renewable energy development.

Areas of difference in the PR GP from the GP is the omission of Objective D, Policy 1, that names specific “new” technologies (including wind energy conversion). However, this omission is not meant to preclude wind energy conversion or any specific technology. Another notable addition to the PR GP is to provide communities with timely, relevant, and accurate information concerning renewable energy facilities in their proposed area (Objective C, Policy 4).

B. State Law and Policy

Two sections of the Hawaii State Planning Act are relevant to the legislation proposed by Resolution No. 19-305. Hawaii Revised Statutes (HRS) Section 226-10, “Objectives and Policies for the Economy-Potential Growth and Innovative Activities” states that it is the policy of the State to “facilitate investment growth and employment” related to “renewable energy development.” And HRS Section 226-18, “Objectives and Policies for Energy Facility Systems,” states that it is the policy of the State to “support research and development as well as promote the use of renewable energy sources.”

The “Hawaii Statewide Comprehensive Economic Development Plan” provides a blueprint for future economic development across the State and all economic sectors. The goal of the Energy cluster is that “Hawaii is less dependent on imported carbon-based energy with shared access to renewable energy benefits and is on track to meet the State’s goal of 100 percent clean energy by 2045.” Objectives within the goal include updating the electrical grid infrastructure, improving awareness and understanding of energy resources, and expanding energy efficiency and sustainability practices. State policy regarding wind machines can also be found in the “Renewable Portfolio Standard” (RPS) signed by the Governor on June 8, 2015. The RPS is intended to alleviate the State’s dependence on imported fuels.

The RPS requires Hawaii’s electric companies and their affiliates to generate renewable energy equivalent to the following:

- 30 percent by 2020;
- 40 percent by 2030;
- 75 percent by 2040; and
- 100 percent by 2045.

The State of Hawaii Public Utilities Commission Report to the 2019 Legislature revealed that the RPS remains effective in helping the State achieve its policies and objectives with respect to developing renewable energy resources in Hawaii. The Hawaiian Electric Company is on track for achieving the RPS goal of 40 percent by 2030.

The Honolulu City Council endorsed the State's 100 percent clean energy and carbon neutral goal for 2045 via Resolution No. 18-221 and resolved, via Ordinance No. 20-47, to transition to 100 percent renewable energy and achieve net-negative carbon emissions no later than 2045.

Finally, the Hawaii State Legislature considered the establishment of a one-mile setback between dwellings and wind energy facilities in 2020, via House Bill 2188. In testimony on House Bill 2188 HD1, the Hawaii State Energy Office (HSEO) wrote:

"...HSEO prefers a setback requirement for wind turbines that is set at a ratio of the height of the turbines (an approach taken in several other states) to more appropriately provide community protections while enabling wind energy to contribute towards Hawaii's renewable energy mandate. HSEO notes that three counties in Hawaii - the City and County of Honolulu, the County of Maui, and the County of Hawaii - require wind turbines in certain zones to be set back from the property line at least as far as the height of the turbines, or a 1:1 setback HSEO does not have a specific ratio to suggest at this time, but acknowledges that a 1:1 setback is likely insufficient in areas that are not vacant and notes special consideration is needed to account for proximity to homes, schools, emergency storm shelters, other occupied areas, important infrastructure, and less tangible local values of importance to communities."

The Legislature recognized that wind energy facilities are a valuable source of renewable energy that brings the State closer to realizing its goal of 100 percent renewable energy by 2045. The Bill was not adopted.

C. Current Zoning Regulations

Section 21-10.1 of the LUO defines wind machines as "... devices and facilities, including appurtenances, associated with the production and transmission of wind-generated energy."

Table 21-3 ("Master Use Table") of the LUO specifies that:

- Wind machines over 100 kilowatts are allowable only with an approved Major Conditional Use Permit (CUP) in the AG-1 Restricted Agricultural, AG-2 General Agricultural, and Country Districts;
- Wind machines up to 100 kilowatts are allowable with an approved Minor CUP in the Agricultural, Country, Residential, and Business Districts, as well as the I-1 Light Industrial, I-2 Heavy Industrial, and IMX-1 Industrial-Commercial Mixed-Use Districts; and
- Wind machines up to 100 kilowatts are also allowed as an accessory to another principal permitted use in the Agricultural and Country Districts.

According to the American Wind Energy Association, small wind turbines are generally defined as those with a capacity of 100 kilowatts and less. Residential-scale turbines generally have a rated capacity of 10 kilowatts or less and commercial-scale turbines are those with a rated capacity between 21 and 100 kilowatts. Utility-scale wind turbines range in size, but generally have a capacity of greater than 100 kilowatts.

Section 21-4.60(c)(7) of the LUO specifies that each wind machine must be set back from all property lines one foot for each foot of height, as measured from the highest vertical extension of the system.

All wind machines are also subject to the specific use development standards of LUO Section 21-5.700. The height and setback requirements are repeated in this section, which specifies again that all wind machines must be set back from all property lines a minimum distance equal to the height of the system. The height measurement must include the height of the tower and the farthest vertical extension of the system. Rooftop mounted vertical-axis wind machines must also comply with height setbacks enumerated in Articles 3 and 9 for the underlying zoning district or special district precinct.

There are a number of factors that developers must take into account when siting a utility-scale wind energy facility, including, without limitation:

- Adequate and consistent wind speeds;
- Accessibility, with slopes and geotechnical characteristics that can accommodate turbine foundations;
- Proximity to transmission lines with available capacity;
- Land availability;
- Conformance with state and county land regulations;
- Avoidance of sensitive environmental, cultural, or historic resources; and
- Community acceptance.

These factors create significant constraints on the viability of wind energy projects and place inherent limitations on the siting of wind machines before setbacks and other development standards are applied.

IV. ANALYSIS

The modified setbacks proposed by Resolution No. 19-305 would result in a *de facto* ban on utility-scale wind machines on the island of Oahu. There are no properties on Oahu that would meet the new proposed minimum setback requirements (see the map attached). In addition, even if there were properties on Oahu large enough to accommodate the setbacks proposed by Resolution No. 19-305, the setbacks would almost certainly preclude the siting a wind machines in productive and

economically-feasible locations. Therefore, we believe that Resolution No. 19-305 is inconsistent with the above-discussed provisions in the City's GP.

Resolution No. 19-305 is also inconsistent with the above-discussed provisions in the State Planning Act.

In zoning codes, setbacks are generally imposed to separate uses for health and safety reasons. Similar or complementary uses do not require much or any separation. Setbacks depend on the degree to which a use can be anticipated to have adverse impacts on the adjacent or nearby use.

The Department of Planning and Permitting (DPP) understands that some people who live near the existing wind machines on Oahu are concerned about the impact of the machines on their health and safety. However, DPP is not aware of any generally recognized facts or studies which necessitate a five-mile setback from 100 kilowatts or greater wind machines. Research conducted by the American Planning Association in "Planning for Wind Energy, Planning Advisory Service Report Number 566" (2011) did not find widespread evidence of acute health-related impacts from wind energy projects.

The greatest setback in Honolulu's zoning code is 1,500 feet. Currently, only seven uses may not be located within 1,500 feet of any zoning lot in a Country, Residential, Apartment, Apartment Mixed-Use, or Resort District. These uses include:

- Major agricultural products processing;
- Biofuel processing facility;
- Major composting facility;
- Explosives and toxic chemical manufacturing, storage and distribution facility;
- Petroleum processing facility;
- Salvage, scrap, and junk storage and processing operations; and
- Waste disposal and processing facility.

The zoning code also allows the 1,500-foot setback to be reduced to 500 feet when it can be determined that potential impacts will be adequately mitigated due to prevailing winds, terrain, technology, or similar considerations.

Wind machines are currently required to be setback a distance equal to the total system's height from a property line to address fall hazards in the event of a structural failure.

The DPP followed the progression of House Bill 2188, HD1 in 2020, which attempted to establish a one-mile setback from the nearest existing farm dwelling or residential dwelling unit for certain wind energy facilities in agricultural districts. Ultimately, the Bill was not adopted. The legislature recognized that wind energy facilities are a valuable source of renewable energy that brings the State closer to realizing its goal of 100 percent renewable energy by 2045. In testimony on House Bill 2188, HD1, HSEO reported that Hawaii's other counties have similar setback requirements to those of Honolulu's for wind machines. According to HSEO, communities that impose

requirements that are similar to the existing zoning code setbacks include, without limitation: Cordova, Alaska; Sonoma County, California; Sussex County, Delaware; Hillsborough County, Florida; Miami County, Indiana; St. Joseph County, Indiana; Clark, Kansas; Cloud, Kansas; Town of Harwich, Massachusetts; Emmet County, Michigan; City of Mahtomedi, Minnesota; Adams County, Nebraska; Washington County, Oregon; and Wichita Falls, Texas.

If the legislation proposed by Resolution No. 19-305 is adopted, it will be necessary for the City Council to identify the facts and information that it relies upon to justify the proposed five-mile setback.

V. CONCLUSION AND RECOMMENDATION

Amending the LUO such that wind machines with a rated capacity of more than 100 kilowatts be setback from all property lines, a minimum of five-miles would result in a *de facto* ban on such wind machines and make the City and State's energy goals difficult to achieve. In our opinion, the adoption of the proposed legislation is not consistent with the City's GP. In addition, we are not aware of any data and/or studies that justify the imposition of a five-mile setback. If the City decides to pass the City Council's proposed amendment, it will be necessary to identify the facts and information relied upon to support the imposition of this significant restriction.

Based on the analysis summarized above, the DPP recommends the disapproval of the Legislation proposed by Resolution No. 19-305. To the extent that the City wishes to amend the setbacks applicable to wind machines with a rated capacity of 100 kilowatts or greater, the DPP suggests that setbacks may be established at "1,500 feet from all property lines" or "at a distance equal to no less than two feet for each foot of height, measured from the highest vertical extension of the system, whichever is greater." These formulations would increase the setbacks, but also give us the flexibility to account for future technological changes that may lead to increases in wind machine height for greater renewable energy production.

The proposed text for this amendment is attached as "Bill A." The DPP believes this compromise language addresses the concerns raised in Resolution No. 19-305, while simultaneously allowing the City and State to achieve its clean energy goals.

DPP's PROPOSED BILL A



CITY COUNCIL

CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE _____

BILL _____

A BILL FOR AN ORDINANCE

RELATING TO WIND MACHINES.

BE IT ORDAINED by the People of the City and County of Honolulu:

SECTION 1. Purpose. The purpose of this ordinance is to address wind machine setbacks.

SECTION 2. Section 21-5.700, Revised Ordinances of Honolulu 1990 ("Wind machines"), is amended by amending subsection (a) to read as follows:

- "(a) All horizontal-axis [~~wind machines~~] and ground-mounted vertical-axis wind machines ~~with a rated capacity of up to 100 kilowatts~~ must be set back from all property lines a minimum distance equal to the height of the system. Height includes the height of the tower or its vertical support structure and the farthest vertical extension of the wind machine. All horizontal-axis and ground-mounted vertical-axis wind machines with a rated capacity of 100 kilowatts or greater must be set back from all property lines a minimum distance of 1,500 feet or a minimum distance equal to two times the height of the system, whichever is greater. Section 21-4.60(c)(7) notwithstanding, for rooftop mounted vertical-axis wind machines with a rated capacity of up to 100 kilowatts, the machinery must be set back pursuant to the height setbacks enumerated in articles 3 and 9 for the underlying zoning district or special district precinct."

SECTION 3. Ordinance material to be repealed is bracketed and stricken. New ordinance material is underscored. When revising, compiling or printing this ordinance for inclusion in the Revised Ordinances of Honolulu, the Revisor of Ordinances need not include the brackets, the material that has been bracketed and stricken, and underscoring.



A BILL FOR AN ORDINANCE

SECTION 4. This ordinance takes effect upon its approval.

INTRODUCED BY:

DATE OF INTRODUCTION:

Honolulu, Hawaii

Councilmembers

APPROVED AS TO FORM AND LEGALITY:

Deputy Corporation Counsel

APPROVED this _____ day of _____, 20 _____.

Mayor
City and County of Honolulu

COUNCIL-INITIATED RESOLUTION 19-305



RESOLUTION

PROPOSING AN AMENDMENT TO CHAPTER 21, REVISED ORDINANCES OF HONOLULU 1990 (THE LAND USE ORDINANCE), RELATING TO WIND MACHINES.

WHEREAS, while clean renewable energy sources are essential to the development of sustainable communities, the siting of wind farm projects has been the subject of considerable controversy; and

WHEREAS, the rotation of wind machine blades produces audible low-frequency noises, infrasound, and shadow flicker patterns; and

WHEREAS, persons living in close proximity to wind farms have reported adverse health symptoms, including sleep disturbance, dizziness, headache, fatigue, and psychological distress, that they attribute to exposure to wind machines; and

WHEREAS, a 2018 study by a team of researchers from the University of Toronto found that residential proximity to wind turbines is correlated with annoyance and health-related quality of life measures; and

WHEREAS, the City's Land Use Ordinance ("LUO") currently requires horizontal-axis wind machines and ground-mounted vertical-axis wind machines to be set back from all property lines a minimum distance equal to the height of the system; and

WHEREAS, the Council believes there is a need to increase the setback distance for wind machines in order to protect people from any possible negative health impacts that wind machines may cause; and

WHEREAS, Charter Section 6-1513 provides that "[a]ny revision of or amendment to the zoning ordinances may be proposed by the council and shall be processed in the same manner as if proposed by the director [of planning and permitting]"; and

WHEREAS, the term "zoning ordinances," as used in Charter Section 6-1513, includes both amendments to the LUO and to ordinances designating particular parcels of property in terms of the LUO; and

WHEREAS, ROH Chapter 2, Article 24, Part A, establishes procedures and deadlines for the processing of the City Council ("Council") proposals to revise or amend the general plan, the development plans, the zoning ordinances, and the



CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 19-305

RESOLUTION

BE IT FINALLY RESOLVED that, pursuant to ROH Chapter 2, Article 24, Part A, the Clerk shall transmit copies of this resolution and the Exhibit attached hereto to the Director of Planning and Permitting and the Planning Commission, and shall advise them in writing of the date by which the Director's report and accompanying proposed ordinance are required to be submitted to the Planning Commission.

INTRODUCED BY:

Huda Tsunayoshi

DATE OF INTRODUCTION:

NOV 8 2019

Honolulu, Hawaii

Councilmembers

EXHIBIT A



CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE _____

BILL _____

A BILL FOR AN ORDINANCE

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CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE _____

BILL _____

A BILL FOR AN ORDINANCE

SECTION 4. This ordinance takes effect upon its approval.

INTRODUCED BY:

DATE OF INTRODUCTION:

Honolulu, Hawaii

Councilmembers

APPROVED AS TO FORM AND LEGALITY:

Deputy Corporation Counsel

APPROVED this _____ day of _____, 20____.

Mayor
City and County of Honolulu

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII
CERTIFICATE

RESOLUTION 19-305

Introduced: 11/08/19 By: HEIDI TSUNEYOSHI

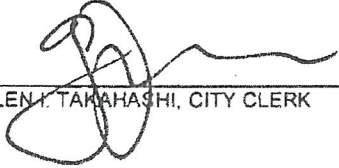
Committee: ZONING, PLANNING AND
HOUSING

Title: RESOLUTION PROPOSING AN AMENDMENT TO CHAPTER 21, REVISED ORDINANCES OF HONOLULU 1990
(THE LAND USE ORDINANCE), RELATING TO WIND MACHINES.

Voting Legend: * = Aye w/Reservations

02/27/20	ZONING, PLANNING AND HOUSING	CR-102(20) – RESOLUTION REPORTED OUT OF COMMITTEE FOR ADOPTION. 5 AYES: ELEFANTE*, KOBAYASHI, MANAHAN, MENOR, WATERS.
03/18/20	COUNCIL	CANCELLED AND NOT CONSIDERED.
05/20/20	COUNCIL	CR-102(20) AND RESOLUTION 19-305 WERE ADOPTED. 9 AYES: ANDERSON, ELEFANTE*, FUKUNAGA, KOBAYASHI, MANAHAN, MENOR, PINE, TSUNEYOSHI, WATERS.

I hereby certify that the above is a true record of action by the Council of the City and County of Honolulu on this RESOLUTION.


GLEN I. TAKAHASHI, CITY CLERK


IKAIKA ANDERSON, CHAIR AND PRESIDING OFFICER